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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,896	02/02/2001	Eric R. Benson	14101-NN009	8160

			EXAMINER

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EXAMINER
LIU, JOSHUA C

ART UNIT	PAPER NUMBER
2121	4

DATE MAILED: 02/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
	09/775,896	BENSON ET AL.
Office Action Summary	Examin r	Art Unit	
	Joshua C Liu	2121	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondenc address --

Period for Reply

    A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 February 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-15</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-15</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>02 February 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

1.   Claims 1-15 have been examined.

Oath/Declaration

2.   The oath or declaration is defective. A new oath or declaration in compliance

with 37 CFR 1.67(a) identifying this application by application number and filing date is

required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

> ➤ It does not identify the mailing address of each inventor. A mailing
>
>   address is an address at which an inventor customarily receives his or her
>
>   mail and may be either a home or business address. The mailing address
>
>   should include the ZIP Code designation. The mailing address may be
>
>   provided in an application data sheet or a supplemental oath or
>
>   declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.
>
> ➤ It does not identify the city and either state or foreign country of residence
>
>   of each inventor. The residence information may be provided on either on
>
>   an application data sheet or supplemental oath or declaration.

Drawings

3.   The drawings are objected to because of hand-written notations in Fig. 1, 4A-B,

and 5-6. A proposed drawing correction or corrected drawings are required in reply to

the Office action to avoid abandonment of the application. The objection to the

drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Badami

et al (US Patent Number 5,897,672; Issued 4/27/1999).

Claim 6

Claim 6 recites

> A method for determining the quality of a sensor signal in a fuzzy logic controller including the steps of:
>   (a) providing a first cumulative scatter value indicative of a cumulative degree of difference between a plurality of sensor signal values and estimated sensor signal values corresponding to each of the sensor signal values;
>   (b) providing a fuzzy logic membership function in which the x-axis values of the points of inflection of a plurality of fuzzy logic domains are derived from the first cumulative scatter value;
>   (c) retrieving a further sensor signal value;
>   (d) comparing the further sensor signal value with a further estimated sensor signal value;
>   (e) calculating a further scatter value indicative of the individual degree of difference between the further sensor signal value and the further estimated sensor signal value;
>   (f) combining the further scatter value with the first cumulative scatter value to provide a second cumulative scatter value: indicative of the cumulative degree of difference and the individual degree of difference in combination; and
>   (g) amending the fuzzy logic membership function such that the x-axis values of the points of inflection of the plurality of fuzzy logic domains are derived from the second cumulative scatter value.

Claim 6 is anticipated by Badami, wherein Badami teaches:

> ➤ A method for detecting a mix of fabric types making up a load of items disposed
>
> in a clothes washer, comprising the steps of:
>
> (a) See (Badami Fig. 5-7 and 11-13; Col 6 L. 31-54, "The calibration table...
>
> fabric types tested."; Col 7 L. 24-35, "Since real world... their imprecision.");

(b) See (Badami Fig. 8-10 and 14-15; Col 7 L. 36-Col 8 L. 62, "A non-standard...

surface of FIG. 9.");

(c)-(f) See (Badami Col 8 L. 53-Col 9 L. 16, "The average... motor torque."); and

(g) See (Badami Fig. 8-10 and 14-15; Col 9 L. 4-21, "A graphical

representation... blend detected.").

Claim 7

Claim 7 recites

The method of Claim 6, wherein the step of providing a first cumulative value includes the steps of
    a. calculating a first difference between a first of the plurality of sensor signal values and a first of the estimated sensor signal values;
    b. calculating a second difference between a second of the plurality of sensor signal values and a second of the estimated sensor signal values; and
    c. calculating the first cumulative scatter value from at least the foregoing first and second differences.

Claim 7 is anticipated by Badami. See §102 rejection for claim 6, *supra*, and:

a. See (Badami Fig. 5-7 and 11-13; Col 6 L. 31-54, "The calibration table... fabric

types tested."; Col 7 L. 24-35, "Since real world... their imprecision.");

b. See (Badami Col 8 L. 53-Col 9 L. 16, "The average... motor torque."); and

c. See (Badami Fig. 8-10 and 14-15; Col 7 L. 36-Col 8 L. 62, "A non-standard...

surface of FIG. 9.").

Claim 8

Claim 8 recites "The method of Claim 7, wherein the first cumulative scatter value

is a function of the standard deviation of the first and second differences."

Claim 8 is anticipated by Badami.

> ➢ See §102 rejection for claim 7, *supra*, and (Badami Col 8 L. 19-26, "In this
>
> embodiment... of the method.").

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1-5 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Bedami et al (US Patent Number 5,897,672; Issued 4/27/1999) in view of Baraszu

(US Patent Number 5,371,695; Issued 12/6/1994).

Claim 1

Claim 1 recites

> A method for determining the validity of a sensor signal including the steps of:
>   (a) providing a sensor signal from a sensor;
>   (b) providing an estimated sensor signal;
>   (c) determining the difference between the sensor signal and the estimated sensor signal;
>   (d) calculating a standard deviation of the difference;
>   (e) scaling the points of inflection of a fuzzy logic membership function proportional to the
> standard deviation; and
>   (f) processing the sensor signal using the fuzzy logic membership function to determine
> whether the sensor signal is valid or not.

> ➢ Regarding claim 1, Bedami discloses a method for detecting a mix of fabric
>
> types, (Bedami Fig. 1; Col 1 L. 66-Col 2 L. 7, "In accordance... obtained
>
> calibration data.") the method comprising the steps of:
>
> (a) See (Bedami Fig. 1 Element 122; Col 4 L. 10-11, "A first embodiment...
>
> torque sensor.");
>
> (b) See (Bedami Fig. 6; Col 6 L. 30-42, "The calibration table... each load size.");

(c) See (Bedami Col 7 L. 24-27, "Since real world... and polyester.");

(d)-(e) See (Bedami Col 7 L. 55-58, "The membership functions... of FIG. 7."; Col

8 L. 19-31, "In this embodiment... as ANFIS."); and

(f) See (Bedami Col 9 L. 17-26, "The washer controller... maximizing cleaning.").

However, Bedami does not explicitly teach (f) processing the sensor signal to

determine whether the sensor signal is valid or not. Baraszu teaches using fuzzy

rules to determine whether the sensor signal is valid signal or noise (Baraszu Col

5 L. 3-8, "The method and... noise is present."; Col 5 L. 23-26, "Relationships

between... than noise."; Col 5 L. 32-34, "On the other hand... is signal."), in order

–to adaptively filter noise from signal (Baraszu Col 3 L. 57-Col 4 L. 6, "For

purposes of... input values."). Therefore, it would have been obvious to one of

ordinary skill in the art to modify Bedami, in view of Baraszu, by processing the

sensor signal to determine whether the sensor signal is valid or not.

Claim 2

Claim 2 recites "The method of Claim 1, (g) wherein the step of processing

occurs before the step of scaling."

➤ Regarding claim 2, see §103 rejection for claim 1, *supra*, and (Bedami Col 8 L.

49-62, "An estimation... of FIG. 9.").

However, Bedami does not explicitly teach (f) processing the sensor signal to

determine whether the sensor signal is valid or not. Baraszu teaches using fuzzy

rules to determine whether the sensor signal is valid signal or noise (Baraszu Col

5 L. 3-8, "The method and... noise is present."; Col 5 L. 23-26, "Relationships

between... than noise."; Col 5 L. 32-34, "On the other hand... is signal."), in order

-to adaptively filter noise from signal (Baraszu Col 3 L. 57-Col 4 L. 6, "For

purposes of... input values."). Therefore, it would have been obvious to one of

ordinary skill in the art to modify Bedami, in view of Baraszu, by processing the

sensor signal to determine whether the sensor signal is valid or not.

Claim 3

Claim 3 recites "The method of Claim 1, (g) wherein the step of scaling occurs

before the step of processing."

➤ Regarding claim 3, see §103 rejection for claim 1, *supra*.

Claim 4

Claim 4 recites "The method of Claim 1, (g) wherein the fuzzy logic membership

function has at least two domains, including at least one domain that evaluates a sensor

signal as acceptable, and at least one domain that evaluates a sensor signal as

unacceptable."

➤ Regarding claim 4, see §103 rejection for claim 1, *supra*, and (Bedami Fig. 8, 10,

and 15).

However, Bedami does not explicitly teach that at least one domain that

evaluates a sensor signal as acceptable, and at least one domain that evaluates

a sensor signal as unacceptable. Baraszu teaches that at least one domain of

the fuzzy logic membership function that evaluates a sensor signal as

acceptable, and at least one domain that evaluates a sensor signal as

unacceptable (Baraszu Col 4 L. 23-26, "Relationships between... past three

samples?"; Col 4 L. 32-45, "On the other hand... filter bandwidth."), in order –to

evaluate the degree of belief that sensor signal is valid (Baraszu Col 4 L. 46-48,

"In on embodiment... in FIG. 1"). Therefore, it would have been obvious to one

of ordinary skill in the art to modify Bedami, in view of Baraszu, by having at least

two domains in the fuzzy logic membership function, including at least one

domain that evaluates a sensor signal as acceptable, and at least one domain

that evaluates a sensor signal as unacceptable.

Claim 5

Claim 5 recites "The method of Claim 4, wherein (h) the step of scaling includes

the step of multiplying a plurality of points of inflection of the fuzzy logic membership

function by the standard deviation."

> Regarding claim 5, see §103 rejection for claim 4, *supra*, and (Bedami Fig. 8, 10,

> and 15).

However, Bedami does not explicitly teach (g) that at least one domain that

evaluates a sensor signal as acceptable, and at least one domain that evaluates

a sensor signal as unacceptable. Baraszu teaches that at least one domain of

the fuzzy logic membership function that evaluates a sensor signal as

acceptable, and at least one domain that evaluates a sensor signal as

unacceptable (Baraszu Col 4 L. 23-26, "Relationships between... past three

samples?"; Col 4 L. 32-45, "On the other hand... filter bandwidth."), in order –to

evaluate the degree of belief that sensor signal is valid (Baraszu Col 4 L. 46-48,

"In on embodiment... in FIG. 1"). Therefore, it would have been obvious to one

of ordinary skill in the art to modify Bedami, in view of Baraszu, by having at least

two domains in the fuzzy logic membership function, including at least one

domain that evaluates a sensor signal as acceptable, and at least one domain

that evaluates a sensor signal as unacceptable.

Claim 9

Claim 9 recites

A method of individually determining whether a plurality of sequential sensor values are valid comprising the steps of:
     a. reading a sensor value;
     b. determining a degree of difference between the sensor value and an estimated sensor value;
     c. revising the x-axis values of a fuzzy logic membership function that responds to the degree of difference as an input: and produces a signal indicative of the validity of the sensor value as an output;
     d. determining whether the sensor value is valid; and
     e. repeating steps a through d for each of the plurality of sequential sensor values.

➢ Regarding claim 9, Badami teaches a method for individually detecting a mix of

fabric types making up a load of items disposed in a clothes washer, comprising

the steps of:

(a) See (Bedami Fig. 1 Element 122; Col 4 L. 10-11, "A first embodiment...

torque sensor.");

(b) See (Bedami Col 7 L. 24-27, "Since real world... and polyester.");

(c) See (Badami Fig. 8-10 and 14-15; Col 9 L. 4-21, "A graphical

representation... blend detected.");

(d) See (Bedami Col 7 L. 55-58, "The membership functions... of FIG. 7."; Col 8

L. 19-31, "In this embodiment... as ANFIS."); and

(e) See (Badami Col 8 L. 53-Col 9 L. 16, "The average... motor torque.").

However, Bedami does not explicitly teach (d) determining whether the

sensor value is valid. Baraszu teaches using fuzzy rules to determine whether

the sensor signal is valid signal or noise (Baraszu Col 5 L. 3-8, "The method

and... noise is present."; Col 5 L. 23-26, "Relationships between... than noise.";

Col 5 L. 32-34, "On the other hand... is signal."), in order –to adaptively filter

noise from signal (Baraszu Col 3 L. 57-Col 4 L. 6, "For purposes of... input

values."). Therefore, it would have been obvious to one of ordinary skill in the art

to modify Bedami, in view of Baraszu, by processing the sensor signal to

determine whether the sensor signal is valid or not.

Claim 10

Claim 10 recites "The method of Claim 9, further comprising the steps of:

calculating a value indicative of the collective degree of scatter of the individual degree

of differences calculated in step c."

> Regarding claim 10, see §103 rejection for claim 9, *supra*, and (Badami Fig. 5-7

and 11-13; Col 6 L. 31-54, "The calibration table... fabric types tested."; Col 7 L.

24-35, "Since real world... their imprecision.").

However, Bedami does not explicitly teach (d) determining whether the

sensor value is valid. Baraszu teaches using fuzzy rules to determine whether

the sensor signal is valid signal or noise (Baraszu Col 5 L. 3-8, "The method

and... noise is present."; Col 5 L. 23-26, "Relationships between... than noise.";

Col 5 L. 32-34, "On the other hand... is signal."), in order –to adaptively filter

noise from signal (Baraszu Col 3 L. 57-Col 4 L. 6, "For purposes of... input

values."). Therefore, it would have been obvious to one of ordinary skill in the art

to modify Bedami, in view of Baraszu, by processing the sensor signal to

determine whether the sensor signal is valid or not.

Claim 11

Claim 11 recites "The method of Claim 10, wherein the step of calculating is

performed after each step of determining a degree of difference, and wherein the value

indicative of the collective degree of scatter incorporates all of the previous individual

degrees of difference."

> Regarding claim 11, see §103 rejection for claim 10, *supra*, and (Badami Col 8 L.
>
>   53-Col 9 L. 16, "The average... motor torque.").

However, Bedami does not explicitly teach (d) determining whether the

sensor value is valid. Baraszu teaches using fuzzy rules to determine whether

the sensor signal is valid signal or noise (Baraszu Col 5 L. 3-8, "The method

and... noise is present."; Col 5 L. 23-26, "Relationships between... than noise.";

Col 5 L. 32-34, "On the other hand... is signal."), in order –to adaptively filter

noise from signal (Baraszu Col 3 L. 57-Col 4 L. 6, "For purposes of... input

values."). Therefore, it would have been obvious to one of ordinary skill in the art

to modify Bedami, in view of Baraszu, by processing the sensor signal to

determine whether the sensor signal is valid or not.

Claim 12

Claim 12 recites "The method of Claim 11, wherein the value indicative of the

collective degree of scatter is a standard deviation of prior degrees of difference

calculated in step b."

> Regarding claim 12, see §103 rejection for claim 11, *supra*, and (Badami Col 8 L.

> 19-31, "In this embodiment... such as ANFIS.").

However, Bedami does not explicitly teach (d) determining whether the

sensor value is valid. Baraszu teaches using fuzzy rules to determine whether

the sensor signal is valid signal or noise (Baraszu Col 5 L. 3-8, "The method

and... noise is present."; Col 5 L. 23-26, "Relationships between... than noise.";

Col 5 L. 32-34, "On the other hand... is signal."), in order –to adaptively filter

noise from signal (Baraszu Col 3 L. 57-Col 4 L. 6, "For purposes of... input

values."). Therefore, it would have been obvious to one of ordinary skill in the art

to modify Bedami, in view of Baraszu, by processing the sensor signal to

determine whether the sensor signal is valid or not.

Claim 13

Claim 13 recites "The method of Claim 12, wherein x-axis values of the

membership function are themselves functions of the standard deviation."

> Regarding claim 13, see §103 rejection for claim 12, *supra*.

Claim 14

Claim 14 recites "The method of Claim 13, further comprising the step of

calculating a plurality of the x-axis values every time the step of calculating a value

indicative of the degree of scatter occurs."

> ➤ Regarding claim 14, see §103 rejection for claim 13, *supra*.

Claim 15

Claim 15 recites "The method of Claim 14, wherein each of the x-axis values of

the points of inflection are associated with a value that is a function of the collective

degree of scatter."

> ➤ Regarding claim 15, see §103 rejection for claim 14, *supra*.
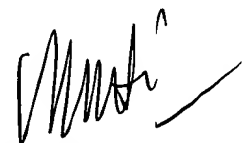
Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joshua C Liu whose telephone number is (703) 305-

6435. The examiner can normally be reached on Monday-Friday, 8:30am-5:15pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Anil Khatri, can be reached on (703) 305-0282. The fax phone number for

the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3900.

ANIL KHATRI
SUPERVISORY PATENT EXAMINER

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